The Repression of Dissent

A SUBSTITUTION MODEL OF GOVERNMENT COERCION

WILL H. MOORE
Department of Political Science
Florida State University

This article describes a substitution model of states' responses to dissident behavior and a statistical test of some sequential hypotheses that are derived from the model. It is motivated by an interest in understanding the sequential response of states to dissident activity. That is, if dissidents protest, what will the state do next? Similarly, if dissidents are cooperative, what will the state do next? The author argues that the answer to both of these questions depends on the interaction of the state's most recent behavior (i.e., repression or accommodation) and the dissident's response. The model produces the hypothesis that states substitute repression for accommodation, and vice versa, in response to dissident protest. Statistical analysis of evidence from Peru and Sri Lanka, 1955 to 1991, suggests that the model captures well the sequential responses of the Peruvian and Sri Lankan governments to dissident behavior during that period.

1. INTRODUCTION

There has been a recent rise in interest in better understanding the relationship between dissent and repression.[1] Some of the studies examine the impact of repression on dissent, others focus on the impact of dissent on repression, while still others examine the interaction between the two variables in a system of equations. This study fulfills the promise I made in the conclusion of a recent study of the impact of repression on dissent (Moore 1998). It reports a theoretical model of the impact of dissent on repression as well as an empirical test of the hypotheses derived from the model.

My previous study found that Lichbach's (1987) expected utility model of the impact of repression on dissent was superior to rival theories.[2] Unfortunately,

1. See, among others, Lichbach (1984, 1987), Tsebelis and Sprague (1989), Davis and Ward (1990), Gupta (1990), Henderson (1991), Khawaja (1993), Poe and Tate (1994), Kowalewski and Hoover (1994), della Porta (1995), Davenport (1995, 1996), Gartner and Regan (1996), Francisco (1995, 1996, forthcoming), Rasler (1996, forthcoming), Franklin (1997), Krain (1998), Lee (1998), Moore (1998), and Olzak and Olivier (1998).

2. The study reports the results of a statistical analysis of Peru and Sri Lanka (1955-1991).

AUTHOR'S NOTE: I would like to thank Shaun Bowler, Andy Enterline, Ashley Leeds, Kursad Turan, John Tures, and Georg Vanberg for helpful comments on a draft from which this article was drawn. A previous version was presented at the 1997 annual meeting of the American Political Science Association, August 28-31, Washington, D.C.

JOURNAL OF CONFLICT RESOLUTION, Vol. 44 No. 1, February 2000 107-127

Lichbach's model is silent on the question of the impact of dissent on repression. However, one might ask whether states substitute repression and accommodation for one another in response to costs imposed by dissidents, much as dissidents substitute nonviolent and violent protest for one another in response to costs imposed by states. The substitution modeling approach used by Lichbach in his study of dissidents can easily be extended to address that question, and this article reports the development of just such a model and the results of an empirical test of two hypotheses drawn from the model.[3]

Before describing the specifics of the model, however, it will prove useful to first sketch an overview. The model imagines a two-actor world populated by a state and a dissident group (one might choose to think of this dissident group as a federation of dissident groups). Both the state and the dissident group are interested in imposing their preferred public policy positions on society, and they have different opinions about what are the best public policies. The model further imagines that both the state and the dissident group are willing to use violence to press their claims. As such, the model helps us explain the state's tactical choices. In addition, the model imagines that the state looks to the recent past to make its decision about how to respond to the dissident group. In this sense, the model imagines that the state is retrospective rather than prospective—it does not choose its behavior based on what it thinks the dissident group will do next but rather on what the dissident group has just done.

One of the virtues of formal models is that they force the scholar to simplify: complex formal models are notoriously unwieldy. The abstraction that is part and parcel to simplification necessarily leaves out interesting issues that surround the topic of inquiry (in this case, state repression). Put differently, any given formal model of state repression will be an incomplete description of state repression because formal models are intentionally simplified abstractions that seek to highlight interesting causal relations that determine state repression. That said, it is important to be explicit about what is, and what is not, illuminated by a given formal model. This model focuses our attention on the sequential response of states to dissidents. That is, it helps us answer the following question: how do states respond to dissident protest behavior? In other words, this model helps us understand what states do when dissidents protest. I used the phrase "sequential response" because I am explicitly interested in understanding the interaction of states and dissidents; I want to know how they respond to one another at the level of the event. An illustration should help clarify.

In an article titled "Colombia Takes Town Back From Rebels," published by the Associated Press, November 4, 1998, Jared Kotler reported that the Colombian military had successfully recaptured the town of Mitu from rebel soldiers. The town had been captured by the rebels 3 days earlier. Prior to the military conflict over Mitu, President Pastrano had rejected a rebel proposal to exchange prisoners. The proposal was prompted by Pastrano's inauguration speech claim that he would negotiate with the rebels and bring peace to Colombia. This example illustrates a brief sequential interaction between the Colombian state and dissident rebels: the state proposes peace

3. In fact, Lichbach (1984) develops a substitution model of the state's ability to govern, and a portion of that model is similar to the model I develop here (see pp. 326-34).

talks, the rebels propose a prisoner exchange prior to talking, the state balks, the rebels seize a city, and the state counterattacks. My model should help us explain state responses to these kinds of actions.

I am interested in explaining states' responses to the behavior of dissident groups. Put differently, I am interested in sequential interaction. As such, I can revise the question asked above and now ask the following: if dissidents protest, what will the state do next? and If dissidents are cooperative, what will the state do next? These questions focus our attention on sequential interaction and might be stated generally as follows:

- Thinking about dissident–state interactions, what does the following sequence look like: dissident protest, _____?

This question focuses attention on the sequential response of the state to dissident behavior. One virtue of posing the question this way is that it leads us to think about behavior of a given actor as being driven by the behavior of another actor, and I submit that this is a rather intuitive way in which many of us think about political violence in general and state repression in particular (see Bakeman and Gottman 1986; Abbott 1992; and Moore 1998, 856-58, for more discussion).

Having explained that the model focuses our attention on state substitution of accommodation and repression in its sequential interaction with a dissident group, it is useful to identify some issues that the model does not address. Questions such as, "Why did the competition between the dissident group and state become violent?" "How will the state respond if the dissident group shifts its ideal policy toward the state's ideal policy?" "What happens if a third actor enters the picture?" or "How do dissidents respond to states?" are not addressed by this model. Put differently, the model does not directly address distributional conflict or the strategic interaction between states and dissidents but is limited to an exploration of the tactical choices of the state. Each of these questions is interesting and, should this model perform well, warrant further exploration. But the first task is to determine whether a more limited model performs well. The domain of the explanans, then, is the sequential response of states to dissident groups in violent political conflicts. I return to a discussion of some of these limitations in the Conclusion.

The remainder of the article proceeds as follows: the next section describes the substitution model, section 3 describes the research design and the data used to test the hypotheses presented in section 2, and the results of the statistical analysis are reported in section 4.

2. STATE SEQUENTIAL RESPONSE TO DISSIDENTS

Moore (1998) showed that Lichbach's (1987) substitution model of dissident responses to state repression can account empirically for sequentially ordered data on dissident and state behavior in Peru and Sri Lanka, 1955 to 1991. Before presenting a substitution model of state behavior responding to dissident protest, it will be useful to briefly describe what I am calling substitution models. A substitution model is a con-

strained optimization model that shows that a given actor substitutes one good for another in a production process. These models focus on the maximization of some goal, given specified constraints.[4] One can construct such a model by specifying the actors involved, their goals, the options available to them to pursue their goals, and the costs to which they are exposed. The constrained optimization modeling approach can then be used to determine the optimal decision given a constraint, and this information can be used to deduce hypotheses about the substitutability of inputs to the production process. While these models were originally developed in economics, they are becoming increasingly popular in political science (e.g., see Sandler, Tschirhart, and Cauley 1983; Lichbach 1984, 1987; Morgan and Palmer 1997, 1998; and Eyerman 1998).

2.1 ASSUMPTIONS

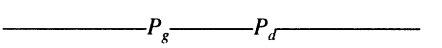
Three sets of assumptions are required to develop the groundwork for the substitution model of state sequential responses to dissident behavior. The first set concerns the actors involved; the second set specifies a policy space and the actors' preferences; and the third set involves the production of policy, the choices available to the actors, and the costs the dissidents can impose on the state.

2.1.1 Actors

Assume that there is a state that establishes public policy. Furthermore, assume that there is a dissident group that desires a policy bundle distinct from the one set by the state. There is, of course, no such thing as a single actor, such as my "state" or "dissident," in the world. Instead, many human beings are responsible for producing public policy. Similarly, many human beings are responsible for producing the protest behavior of dissidents. Nevertheless, it is useful to invoke this simplifying assumption because it makes analysis tractable: it is much easier to study the interaction of two actors than three actors, or eight actors, and so forth.

2.1.2 A Policy Space and Preferences

I also assume that a unidimensional policy space exists and that all possible policy bundles[5] can be assigned a point along that space. Furthermore, I assume that the actors have different, single-peaked preferences located somewhere on the policy space, as illustrated below:



4. Readers unfamiliar with these models will find a useful introduction in most graduate-level microeconomics texts. For a brief introduction to solving these models, see Kreps (1990, 775-89) or Varian (1992, 487-506). Chiang (1984) and Baldani, Bradfield, and Turner (1996) provide more detailed treatments. Varian (1993) describes a *Mathematica* package that can be used to study these models.

5. A policy bundle is a collection of policy positions on all issues that require public policy. That is, a specific policy bundle would have a policy for housing, welfare, taxation, coercion, and so forth.

where P is a specific policy and the subscripts g and d indicate the ideal policy for the government (or state) and the dissidents, respectively.

2.1.3 Policy Production

Several assumptions about policy production will prove useful. First, assume that states produce their preferred policy bundle using a variety of tools but that most of these tools are fixed in the short term. The assumption about the short term is helpful because it allows me to narrow the focus of the model to help me study how states respond to dissident behavior. That is, states might choose from a variety of policy tools to respond to dissent but I am interested in their use of repression and accommodation. As such, I need to conceptualize repression and accommodation and then invoke the assumption that other options are fixed in the short term.

To begin, assume that a unidimensional behavior space exists and that all cooperative and hostile acts that actors can take toward one another can be mapped to that space, which is illustrated below. Furthermore, assume that in situations where the actors' goals are in conflict (as I have assumed is the case), the state responds to the dissident group's behavior by selecting a specific behavior from that space. That is, in selecting the group's behavior they choose a point on the scale below:

$$C\text{——————}N\text{——————}H$$

where C denotes cooperative events, the N denotes neutral events, and the H denotes hostile events.

The terms "cooperative acts" and "hostile acts" need to be defined. First, I make an important distinction between a cooperative act and cooperation. Keohane (1984) provides a useful definition of cooperation as mutual policy adjustment. My model does not address the outcomes of joint decision making and thus does not address cooperation. Rather, it explores the individual behavior of each actor. The focus, then, is on actions taken by each actor, and cooperative acts are those acts taken toward another that are devoid of coercion. Hostile acts, on the other hand, are actions taken toward another that contain coercion. Coercion is defined rather broadly to include any effort to pressure or force another actor to change its position. That is, anything from public denouncements through the use of physical force is defined as coercive (and, thus, a hostile event).

For the substitution model developed below, it will prove useful to simplify the continuous dimension sketched above as follows: states respond to dissidents by choosing among two options—repression (i.e., any act to the right of N on the dimension above) and accommodation (i.e., any act to the left of N on the dimension above).[6]

The next task is to specify the costs that the state must bear. To begin, there is a large variety of costs associated with producing the policies that enable the state to govern,

6. Accommodation is sometimes understood to mean capitulation on a policy issue. I do not intend any such meaning. Rather, these are simply labels used to identify tactical choices about behavior toward an opponent rather than decisions about possible shifts in ideal points on the policy space.

and these include the costs associated with the production of accommodation and repression: to repress or accommodate, states must expend resources. However, all of those costs are not of interest in this analysis and can usefully be treated as fixed in the short term (or exogenous). This assumption enables me to focus directly on the question in which I have interest: the impact of dissent on repression. That is, the presence of protestors in the street, guerrillas in the mountains, and dissidents using bombs and other tools of terror are costly to the state. More specifically, violent dissent imposes costs on the state, and the costs associated with violent protest are greater than the costs associated with nonviolent protest, which are greater than zero. Furthermore, cooperation from the dissidents imposes zero costs on the state. This can be summarized formally as $VP_{cg} > NVP_{cg} > C_{cg} = 0$, where VP represents violent protest, NVP represents nonviolent protest, C represents cooperation, and the subscript cg indicates that the term is a cost to the government.

Next, assume that the state's decision about how much accommodation and repression to use is constrained by the dual facts that (1) it seeks to produce output P_s and (2) it seeks to do so at the minimum possible cost.

Finally, assume that in making that decision, the state is responding to the dissident's most recent act. This final assumption makes the model a sequential one: the state chooses its factor inputs in response to the costs (or lack of costs) imposed by the dissident's most recent action.

These assumptions describe the production of policy for the state. It has a choice between two factor inputs (accommodation and repression) and chooses between those inputs given that it wants to minimize costs while producing a fixed level of policy output.

2.2 A SUBSTITUTION MODEL OF STATE COERCION

With the assumptions that drive the model in place, it is possible to specify a mathematical model, solve the model, and produce some propositions. In Appendix A, I formally demonstrate that this is the case. Here, I develop the propositions graphically.

The assumptions laid out above specify that the state is producing a policy bundle, P_g, and that it does so in part by selecting an optimal mix of accommodation (A) and repression (R) of dissident behavior. The relationship between the optimal policy bundle, P_g, and the inputs A and R can be represented as in Figures 1 and 2. The space in the figure describes all of the possible mixes of accommodation and repression that the state can use to produce its policy bundle. The P_g curve indicates all of the mixes of accommodation (A) and repression (R) that can produce the government's preferred policy bundle. According to the theory, the government chooses the mix that minimizes the price of producing P_g, and the price is determined by the dissident's response to the government's most recent act. That is, the government selects the optimal mix of accommodation and repression in response to dissident behavior and that decision is driven by an interest in minimizing costs, given the constraint of producing P_g. Figures 1 and 2 illustrate how the state responds to dissident behavior.

Figure 1 shows that when the dissidents respond with violence toward a state that is using a relatively repressive agenda toward the dissidents, the state will respond by

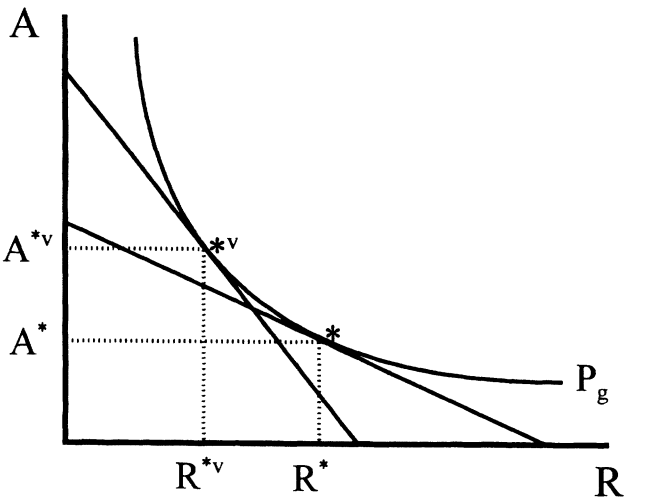


Figure 1: States Substitute Accommodation for Repression

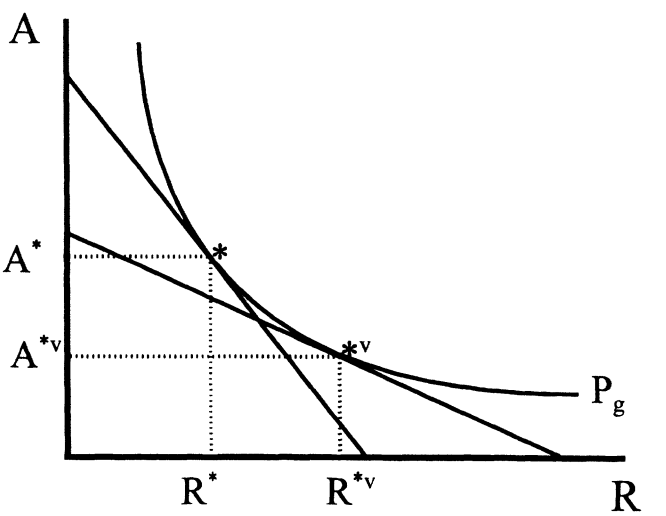


Figure 2: States Substitute Repression for Accommodation

shifting its behavior toward more accommodation and less repression. The line that is tangent to the P_g curve at point * represents a relatively repressive state response toward dissident behavior that produces P_g. If the dissidents respond to that mix of repression and accommodation with violent protest behavior, the theory suggests that the costs to the state of producing P_g using repression go up. This shift is represented

by the line that is tangent to the P_g curve at $*^v$. A comparison of the levels of accommodation and repression associated with * and $*^v$ indicates that the state uses more accommodation and less repression in response to dissident violence. The intuition is simple: the state responds to an increase in the cost of its behavior by shifting away from the behavior that produced the increased cost.

Figure 2 illustrates the same substitution effect, except in Figure 2 the state begins with a relatively accommodative mix (again, represented by the point marked *) and the new point $*^v$ represents the increased cost associated with accommodation given a violent dissident response to the * mix. The state's new mix of accommodation and repression is more repressive than the original.

2.3 SUBSTITUTION PROPOSITION AND HYPOTHESES

The graphical analysis suggests that the state will substitute accommodation for repression (and vice versa) depending on which is more effective in optimizing the status of the polity (i.e., in response to dissident protest behavior). This result implies the following proposition:

Proposition 1: Accommodation and repression are substitutes for the state, and it will move from one toward the other in response to dissident protest behavior.

Turning our attention to sequences of interaction, the proposition has implications that can be subjected to empirical scrutiny. That is, the proposition implies hypotheses about the sequences of behavior one will observe in dissident-state interactions. More specifically, the proposition allows me to posit the following hypotheses about state behavior:

Hypothesis 1: State accommodation that is met with dissent will produce a shift in state behavior toward less accommodation.

Hypothesis 2: State repression that is met with dissent will produce a shift in state behavior toward less repression.

These hypotheses are rather distinct from those generally proposed in this literature. The most common hypothetical relationship is that dissent has a positive, linear impact on repression (e.g., Henderson 1991; Poe and Tate 1994; Davenport 1995, 1996). That is, as dissidents increase their dissent activity, states respond in kind with increases in repression. Similar hypotheses are drawn from predator-prey models of dissent and repression where the expected relationship is positive but nonlinear (Tsebelis and Sprague 1989; Francisco 1995, 1996).

The hypotheses drawn from the model developed here are quite different. The major difference is that the hypotheses developed here are conditional: the impact of dissent on repression is conditioned by the state's previous behavior. This is the case because of (1) the assumption that protest is costly, (2) the assumption of cost minimization, and (3) the focus on sequential interaction. None of the other authors make any of these assumptions.

As such, the hypotheses developed here are novel and stand apart from those that have previously been developed in the literature on the response of states to dissent. The results of the hypothesis tests are presented below, but I first describe the research design and data.

3. RESEARCH DESIGN AND DATA

3.1 THE DESIGN

When testing hypotheses about political violence, a common approach is to use regression analysis to determine what independent variables account for the cross-sectional variance in a variable of interest. I raise this point because of the tendency in the literature to focus on cross-sectional variation. That is, the most common form of data collection in this literature is to identify a unit of analysis and measure variables across those units at a single moment of time. Yet, Jackman (1985) reminds us that data also vary within units over time and that data collection needs to be driven by asking whether cross-sectional or temporal variation (or both) is more relevant given one's research question and theoretical answer to the question.

In addition to the dominance of cross-sectional research designs, some statistical analyses of violent political conflict suffer from a data aggregation weakness. Writing about the relationships between coercion and collective violence, Snyder (1976) put it well when he argued that several problems in the literature are

> largely due to the high levels of aggregation which dominate analyses of coercion and collective violence. National aggregate data are not very well suited to untangle questions of causal direction between collective violence and the coercive actions which both precede and follow violence closely in time—particularly insofar as various forms of official force are differentially related to types of violence. (P. 291)

Because I am interested in the sequential response of states to dissident protest behavior, I need data that captures temporal, rather than cross-sectional, variance.[7] That is, because I want to determine how states respond to dissident behavior, the unit of observation should be the actor-event (i.e., dissident-event or state-event). Perhaps an illustration will prove useful.

Imagine, for a moment, that I gathered data on dissident and state behavior in 1996 across 150 countries and that I was interested in explaining the variance in dissident and government violent behavior across those countries (this is a venerable practice in the literature). My units of observation would be each country and some fixed unit of time, perhaps the country-year (or the country-month, etc.). The data I collected from newspaper or other sources would report the individual acts of each government and dissident group on specific days. Thus, I would record information about the act (per-

7. For similar arguments, see Tsebelis and Sprague (1989, 547-48 and 550-51); Moore (1995, 131-33); and Moore, Lindström, and O'Regan (1996).

haps a bombing), the actor responsible for the act (a dissident group), the target of the act (the government), and the date on which the event occurred (a given day, month, and year). If I were interested in conducting statistical analyses using this information, I also would need to develop a scale to assign numeric values to the acts. Then, to calculate the dissident-country-year variables given this information, I would need to develop a rule for converting all of the acts taken by the dissidents in a specific country in a specific year into a single score. The conventional procedures in the literature for doing so are to calculate the sum or the mean of all dissident events in that country during that year and use the sum or mean as the score for that observation. This practice produces the national aggregate data that Snyder (1976) criticizes as being immaterial to analysis of dissident-state interaction.

If I aggregated the data described as above, I would have a data set with the country-year as the unit of observation, roughly 150 such observations, and data on two variables: dissident behavior toward the state and state behavior toward dissidents. Would that be a useful data set for testing the hypotheses presented above? I submit that it would not. One could certainly determine the correlation between the two variables, but the correlation coefficient is not interesting with respect to the hypotheses presented above: those hypotheses do not address an expected correlation between two variables. Instead, they address the expected similarity and difference between the levels of accommodation and repression across the first and third events in a specific sequence. Following Bakeman and Gottman (1986), Dixon (1988), and Marlin-Bennett, Rosenblatt, and Wang (1991), I submit that using sequentially ordered data, rather than data aggregated over a fixed temporal unit, is appropriate for this analysis.

The main point to be drawn from this discussion is that research design should be driven by the theories one proposes to answer the questions one has asked. As I noted above, the literature on the dissent-repression nexus is dominated by cross-sectional statistical analyses using national aggregate data. These data simply cannot tell us anything about how states respond to dissidents unless we explain why it is interesting to know how they annually respond to one another and why we would want to explain cross-sectional variation. To address the first shortcoming, we need to preserve the sequential order of events so that we can study how states respond to specific actions by the dissidents. To address the second shortcoming, we need to study events as they unfold over time, not across countries.

3.2 THE DATA

The data used in this study come from the Violent Intranational Conflict Data Project (VICDP) (Moore and Lindström 1996). VICDP collected intranational (i.e., within state) conflict events data for the period from 1955 to 1991 using a scheme modeled loosely after the Cooperation and Peace Databank (COPDAB) (Azar 1982). Coders generated the data by coding news reports in *The New York Times Index* and regional news diaries using the VICDP coding scheme. Both the actor and the target of the event were recorded, as was the date and source used.

The VICDP coding scheme is built on the assumption that it is useful to conceptualize human interaction along a cooperation-conflict continuum (as discussed above)

and that when one does so it is possible to assign ordinal values to action taken by one party toward another.[8] Of course, these ordinal values cannot be used in statistical analyses that require interval-level measures; thus, a weighting scheme must be created that can be used to produce interval-level data. To create a weighting scheme, Moore and Lindström (1996, 5-6) followed Azar (1982) and Goldstein (1992) and surveyed 21 research faculty who have an interest in intranational conflict. The weights produced by the survey are reported in Moore and Lindström (1996), and they were used to create the data used in the analyses reported below.[9]

Producing weighted events data is, however, only part of the data preparation process for this analysis. Because I am interested in sequences of events, it is necessary to manipulate the data further. The trouble is that actors do not behave in the ordered manner that our theories impose on them (Dixon 1988, 247; Marlin-Bennett, Rosenblatt, and Wang 1991, 202). To explain, it will prove useful to introduce some notation. Consider the interaction between two actors, A and B. Assume that we have recorded their dyadic behavior (i.e., their behavior toward one another) and recorded these actions (or events) using a coding scheme that records the actor, target, event, and date. We might usefully describe a series of events by noting simply the actor who is acting. That is, let *A* indicate an event where A is the actor and *B* is the target and B indicate an event where B is the actor and A is the target. Using this notation, we could describe a sequence of three events where A took an action toward *B*, followed by B taking an action toward A, then A taking an action toward B as follows: *A, B, A*.

Using the notation described above, a common sequence one might observe between two actors (A and B) in the VICDP data is as follows: *A, A, A, B, A, B, B, A, B* . . . .[10] To return to the problem of generating sequentially ordered data noted by Dixon (1988) and Marlin-Bennett, Rosenblatt, and Wang (1991), the sequence described above is not strictly ordered, that is, each actor does not take turns responding to the other. As a consequence, the analyst must devise a method for producing a strictly ordered sequence of interaction: *A, B, A, B, A* . . . .

Marlin-Bennett, Rosenblatt, and Wang (1991, 202-03) propose a means by which to produce strictly ordered sequences. They begin by making a useful distinction between "turns" and "moves." In the hypothetical sequence above, each entry in the sequence is a move (e.g., the first four moves are *A, A, A, B*—three moves by actor A and one move by actor B). A turn, then, consists of an uninterrupted sequence of moves by the same actor. For example, the first three moves in the hypothetical sequence above (i.e., *A, A, A*) comprise actor A's first turn. Actor B's first turn is composed of a single move (i.e., *B*), as is actor A's second turn. Actor B's second turn is composed of

8. The Violent Intranational Conflict Data Project (VICDP) scheme thus produces data on what is often referred to as the intensity of conflict behavior (i.e., the degree of violence) but not the scope of the behavior (i.e., the number of people involved) (see Gurr 1970, 9-10).

9. To learn more about the VICDP data, information is available on the World Wide Web at: http://garnet.acns.fsu.edu/~whmoore/vicdp/vicdp.html.

10. To elaborate, the newspaper reports that would produce a sequence such as this might be as follows: car bomb explodes, terrorists kidnap foreign executive, terrorists release foreign executive, the minister of defense announces new policies to tackle terrorists, bomb explodes in village, antiterror squad arrests three suspected terrorists, government announces curfew, car bomb explodes during rush hour, and government imposes martial law. The terrorists would be actor A and the state would be actor B.

two moves (i.e., *B, B*). Following Marlin-Bennett, Rosenblatt, and Wang, I transformed the stream of move interactions into a stream of turn interactions, and use the turn data below. To convert the moves into turns, I calculated the mean score of the moves that comprised each turn.

The hypotheses also require one to distinguish among nonviolent protest, violent protest, repression, and accommodation. The VICDP events data can be divided easily into such categories. All cooperative events (i.e., those scored between 1 and 7, inclusive on the VICDP scale) are considered accommodation events. The conflictual events are divided into two groups for the dissidents: nonviolent protest events are operationalized as those events assigned between 9 and 11, inclusive on the VICDP scale, and violent protest events are operationalized as those assigned between 12 and 15, inclusive on the VICDP scale. For the government, repression is defined operationally as those events between 9 and 15, inclusive on the VICDP scale.

Since I am interested in the interactions between actors, I needed to create both the dissident and state actors in these data. The VICDP data identify each actor by the name used in press reports. That is, one will find actors/targets such as Sendero Luminoso, Tupac Amaru, Tamil Tigers, Popular Action Party, Sri Lanka Freedom Party, national executive, military, and police in the VICDP data, but one will not find any actor/target labeled dissidents or state. Because the model treats the state and dissidents as unitary actors, it was necessary to aggregate the actions of various groups to create the state and dissident actors/targets. Furthermore, because I am interested in a dyadic interaction (i.e., state behavior toward dissidents rather than state behavior toward any and all actors), I needed to identify those events where the state acted against the dissidents or vice versa (thus leaving out all dyadic interactions among dissident groups, etc.). I briefly describe that process here, but the reader will find more detail in Appendix B.

The VICDP data identifies the following state actors:

- government (i.e., executive, legislative, and judicial)
- military
- police

To operationalize state action toward dissidents, I selected only events where the government, the military, or the police took action toward either a dissident group, the population (or a subset such as an ethnic group or a labor union), or a political party.

The population (i.e., nongovernment) is divided into the following general categories in the VICDP data:

- ethnic groups and population
- guerrillas
- social groups (e.g., students, labor unions, etc.)
- political parties
- organized crime
- elites (e.g., business organizations, landowners, etc.)

To operationalize dissident action toward the state, I selected those events where any of the above groups took action toward the state. Lists of the actors that form the state-to-dissident and dissident-to-state dyads are available on the World Wide Web as described in Appendix B.[11]

Finally, to determine whether the data from Peru and Sri Lanka are consistent with the hypotheses, I first isolated each of the sequences from the rest of the sample and then conducted difference of means tests between the two actions taken by the dissidents in the sequence (i.e., the first and third event in each sequence).[12]

4. RESULTS

To test the hypotheses, I first isolated the relevant sequence and then conducted a difference of means test between the first and third event in each sequence (i.e., the two dissident events in the "state, dissident, state" sequences). The difference of means test is useful because the hypotheses specify the sequences for which there will be a difference between the first and third event. I can thus use statistical inference and accept or reject the null hypothesis of no difference between the mean values of the first and third event in each of the sequences. To examine the robustness of the results, I created moving average variables and examined whether differences surfaced when I used them in place of the single event variables reported in Tables 1 and 2.[13] Any differences between the findings reported in the tables and those using moving average variables are reported in Notes 14 and 15. The results are presented in Tables 1 and 2.

Table 1 reports the results of the test of hypothesis 1: the sequence of "state accommodation, dissent" will be followed by an increase in state repression. The hypothesis would be rejected if the mean value of the state event following the dissident event were higher than the mean value for the state event preceding the dissident event.[14] As Table 1 indicates, this circumstance fails to obtain in either case: the Peruvian and Sri Lankan states responded to the "accommodation, dissent" sequence with a shift toward repression. Furthermore, in both cases, the difference is statistically significant.[15]

The results of the test of hypothesis 2 are reported in Table 2. Recall that hypothesis 2 concerns the sequence of "state repression, dissent" and anticipates that the state

11. The state-to-dissident and dissident-to-state dyads are mirror images of one another conceptually but not necessarily empirically. In other words, there are some dyads where the state may take action against a group or sector of the population but that group or sector will not respond in kind (or vice versa).

12. The files used to do this coding have been deposited at the Inter-University Consortium for Political and Social Research's Publication-Related Archive (PRA): http://www.icpsr.umich.edu.

13. For the event prior to dissident action, I created a three-event moving average (i.e., $\frac{Event_{-2}+Event_{-1}+Event_{0}}{3}$). For the event following the dissident action, I also used a three-event moving average (i.e., $\frac{Event_{0}+Event_{+1}+Event_{+2}}{3}$). Because I am only interested in state events, I skipped the dissident events when calculating these moving average variables (recall that the data are ordered as a strict sequence).

14. The VICOP data are sealed such that positive values represent cooperation and negative values represent hostility. Thus, higher values are more cooperative and lower values are more hostile.

15. I used the STAT command in Shazam (version 8) to conduct the ANOVA tests. See Bohrnstedt and Knoke (1982, 197-212) for a discussion of using ANOVA to test for the difference between means. At $\alpha = .05$, the critical value for Peru is 4.10 and the critical value for Sri Lanka is 3.34. The strong shift from accommodation to repression holds when one uses the moving average variables described in note 13, but the significance of the F test disappears when both moving average variables are used.

TABLE 1
Pre- versus Postdissent Behavior Following State Accommodation

	Peru	*Sri Lanka*
Predissent mean	3.81	3.80
Postdissent mean	–3.97	–4.43
F	51.01	83.69
N	13	25

will respond with a move toward accommodation (i.e., a decrease in repression). Hence, the hypothesis would be rejected if the mean value of the state event following the dissent event is lower than the mean value of the state event preceding the dissent event. As Table 2 indicates, the evidence from Peru and Sri Lanka is consistent with hypothesis 2: both states exhibit lower levels of conflict behavior following a "repression, dissent" sequence. As above, in both cases this difference is statistically significant.[16]

To summarize, the findings are consistent with the hypotheses derived from the substitution model: the Peruvian and Sri Lankan states tended to substitute accommodation for repression and repression for accommodation whenever either tactic was met with dissent. Put differently, dissidents can impose costs on states, and this study shows that the Peruvian and Sri Lankan states are sensitive to (i.e., respond to) such behavior. As I noted in the Introduction, substituting between repression and accommodation brings each tactic in line with its costliness. Put differently, states use effective tactics (i.e., those that are least costly).

5. CONCLUSION

The major implication of the substitution modeling exercise and the supportive evidence is that states are purposive actors that are capable of acting strategically. This has become an increasingly common assumption in the literature, and the rallying cry to tear down the theories of mass behavior are no longer necessary.[17] Scholars routinely begin their analyses of state repression and dissident protest with the assumption that the actors are purposive, or rational. However, few analyses have been done that expose these rational theories to systematically gathered evidence. Most of the statistical research in this field has been driven by an effort to test what Zinnes (1976) calls ad hoc hypotheses rather than hypotheses that have been explicitly derived from formally developed theory. Furthermore, the formal literature is rarely empirical in that it typically relies on brief descriptions of representative examples or no evidence at all: systematic hypothesis tests are unusual. This study couples the two and, when combined

16. At $\alpha = .05$, the critical value for both cases is 3.07. As above, the shift remains when both moving average variables are used, but the difference is not statistically significant.

17. I am thinking here of the critiques of mass behavior models offered by the resource mobilization and political process theorists in sociology.

TABLE 2
Pre- versus Postdissent Behavior Following Repression

	Peru	*Sri Lanka*
Predissent mean	–5.47	–6.25
Postdissent mean	–4.44	–5.36
F	6.69	8.48
N	113	239

with Lichbach (1987) and Moore (1998)—who provide a similar model and empirical evidence with regard to dissident responses to state repression—provides strong support for the rationalist assumptions that have become so common in this field of inquiry. What remains to be done is to continue to expose the contentions here to additional empirical scrutiny. Furthermore, the model can be probed for additional hypothetical implications.

That said, it might be useful to turn a critical eye toward the model and ask what might be done differently. As noted in the Introduction, the model is built on the assumption that distributional conflict is at the heart of dissident-state interactions. That is, I assume that dissidents and states fight over their ideal policies, P_d and P_g. This is a conflict over the distribution of goods and services in society. Yet the model does not tell us about that distributional conflict: it is not concerned with questions such as, "What happens if the state agrees to shift its ideal policy toward the dissident's ideal policy?" Revising the model to address these types of distributional questions would expand the scope of the explanans in an interesting and useful fashion, thus increasing the utility of the model.

Another limitation of the model is that it is retrospective rather than prospective. One could argue that game theory has largely supplanted optimization theory in economics because game theory is interactive and interaction enables groups to be prospective (i.e., respond to the anticipated behavior of their rivals). Thus, a major advantage of developing an interactive model of dissident-state interaction is that such models allow the actors to be prospective in their behavior. That is, they can look into the future, anticipate the behavior of their rival, and act accordingly. The model developed here is retrospective: the state looks to the past and then selects its next tactic without concerning itself with how the dissidents will respond. The problem with retrospective models is that if the actors they are modeling are actually prospective, then there is a selection effect that produces the observed evidence (Bueno de Mesquita 1997). Selection effects bias inferences drawn from data that do not account for the effects. Thus, the assumption that actors are retrospective is open to a bias threat. Prospective, interactive models can highlight where selection effects may be present. For that reason, a useful future direction for research is the development of prospective, interactive models, and game theory provides a useful set of theoretical tools for developing such models.

APPENDIX A

In this appendix, I formally deduce the propositions identified above. The mathematics and theory were developed by economists and are described in every graduate-level microeconomics text. My presentation below is general, following standard practice in most texts.[18]

Constrained optimization[19] modeling enables one to study the decision an actor makes between two or more inputs to a productive process, given a budget constraint. I am interested in studying the state's production of the status of the polity, with a particular interest in its use of accommodation and repression, given the costs imposed on it by dissident behavior. The constrained optimization model will enable me to determine the optimal mix of accommodation and repression given both the desired status of the polity and the cost constraint. While this information is not, of itself, particularly interesting, we also can explore the comparative statics of the model. That is, one can use well-developed modeling techniques to determine the relationship between an exogenous change in the costs and the resultant change in the state's choice of accommodation and repression. Doing so will enable me to demonstrate the trade-off between accommodation and repression depicted in Figures 1 and 2.

The analysis proceeds in three steps. First, I specify a cost function, a production function, and the constraint against which costs will be minimized. Second, I establish that the production function has a global minimum and determine what those minimal values are. That process requires that both first- and second-order conditions are met. Third, I conduct a comparative statics analysis to demonstrate the substitution effect depicted graphically in Figures 1 and 2.

Given the assumptions identified in section 2, define the following:

- A = accommodation (by government)
- R = repression (by government)
- C_g = total costs to government
- α = unit costs to government imposed by accommodation
- ρ = unit costs to government imposed by repression
- P_g = policy that government seeks to maintain
- £ = the Lagrangian function
- λ = the Lagrangian multiplier

The cost function is represented by equation 1:

$$C_g = \alpha A + \rho R. \tag{1}$$

Equation 1 needs to be minimized subject to the constraint that the state produces its preferred policy, P_g. Assume that the state produces P_g with a smooth, increasing, and strictly quasi-concave production function, $P(A, R)$. The constraint can be specified as $P(A, R) = P_g$, thus ensuring that P_g is produced, and $A, R > 0$, thus ruling out corner solutions. A standard approach to this problem is to form the Lagrangian:

$$£(A, R, \lambda, P_g) = (\alpha A + \rho R) + \lambda(P_g - P(\mathrm{A}, R)). \tag{2}$$

18. Readers who are not familiar with these models might be interested in sources that describe them well. I found the presentation in Baldani, Bradfield, and Turner (1996) particularly helpful. Chiang (1984) is also an excellent source for learning about these models.

19. Constrained optimization is a more conventional term in the economics literature for what I have been calling substitution modeling.

I am ultimately interested in the values of the endogenous choice variables A^* and R^* because I can then study the impact that changes in the exogenous cost variables α and ρ have on them. Since dissent behavior accounts for the values of α and ρ, their impact on A^* and R^* is the central focus of the analysis. However, before I conduct that analysis, I must first establish that A^* and R^* are minimum values. The Lagrangian function described in equation 2 is useful for this purpose. To establish that the equilibrium values of A and R are minimums, I differentiate equation 2 with respect to A, R, and λ, setting each to zero:

$$\frac{\partial \pounds}{\partial A} = \alpha - \lambda P_A = 0 \tag{3}$$

$$\frac{\partial \pounds}{\partial R} = \rho - \lambda P_R = 0 \tag{4}$$

$$\frac{\partial \pounds}{\partial \lambda} = \left(P_g - P(A,R)\right) = 0 \tag{5}$$

where $P_A = \frac{\partial P_g}{\partial A}$, and $P_R = \frac{\partial P_g}{\partial R}$. Equation 5 ensures that the policy P_g is produced. Furthermore, some manipulation of equations 3 and 4 will establish that the tangent where the isocost curves (i.e., the straight lines)[20] in Figures 1 and 2 meet the isoquant curve (i.e., the curve labeled P_g)[21] is the minimum cost of producing P_g. Setting equation 3 equal to equation 4 and rearranging yields the following:

$$\frac{\alpha}{\rho} = \frac{P_A}{P_R}. \tag{6}$$

Equation 6 describes the marginal rate of technical substitution between accommodation and repression, that is, the ratio of the cost of accommodation and repression. This ratio describes the isocost curves. The result of equation 6 is important because it establishes that the tangency of an isocost curve with the isoquant curve is the minimum cost at which P_g can be produced.

In addition, I must examine the second-order conditions of the Lagrangian function. This involves an examination of the bordered Hessian matrix and is rather tedious. Fortunately, it is a well-known result that any "smooth, increasing, strictly quasiconcave production function" meets the second-order condition (Chiang 1984, 421). Since I have assumed that the production function, $P(A, R)$ has those criteria, the second-order conditions are met. I thus skip the presentation of the second-order conditions in favor of an appeal to this result and move to the comparative statics.

Given that the first- and second-order conditions are satisfied, I can proceed with the comparative statics. The objective is to specify A^* and R^* as a function of the other variables in the model (i.e., α, ρ, and P_g). Doing so enables one to determine how changes in α, ρ, and P_g will influence A^* and R^*. This can be done by taking the total differential of the first-order conditions, as follows:

20. Isocost curves represent the cost ratio of inputs to a production process, that is, all of the combinations of two inputs given a specific total cost.

21. The isoquant curve is described by the production function, $P(A, R)$.

$$\begin{aligned} d\alpha - \lambda P_{AA}dA - \lambda P_{AR}dR - P_A d\lambda = 0 \\ d\rho - \lambda P_{RA}dA - \lambda P_{RR}dR - P_R d\lambda = 0 \\ dP_g - P_A dA - P_R dR = 0. \end{aligned} \tag{7}$$

Writing the system of equation 7 in matrix notation, it is possible to use Cramer's rule to conduct a comparative statics analysis.

$$\begin{bmatrix} -\lambda P_{AA} & -\lambda P_{AR} & -P_A \\ -\lambda P_{RA} & -\lambda P_{RR} & P_R \\ -P_A & -P_R & 0 \end{bmatrix} \begin{bmatrix} dA \\ dR \\ d\lambda \end{bmatrix} = \begin{bmatrix} -d\alpha \\ -d\rho \\ -dP_g \end{bmatrix}. \tag{8}$$

The first matrix in equation 8 is the second-order bordered Hessian matrix of the Lagrangian (i.e., equation 2). It is convenient to use the symbol $|\overline{H}|$ to denote the bordered Hessian. Given that the second-order conditions are met, we know that $|\overline{H}|$ has a negative sign (Baldani, Bradfield, and Turner 1996, 233-34). This information is critical to determining the sign of the differentials of A^* and R^* with respect to α, ρ, and P_g. The objective is to show that the differentials of A^* with respect to ρ and R^* with respect to α are positive. That is, I want to demonstrate that an increase in the cost of repression, ρ, leads to an increase in the use of accommodation, A, and that an increase in the cost of accommodation, α, leads to an increase in the use of repression, R. Positively signed derivatives will establish that relationship and form the basis for the shifting isocost curves depicted in Figures 1 and 2.

The next step is to use Cramer's rule to solve for both $dA^*(\alpha, \rho, P_g)$ and $R^*(\alpha, \rho, P_g)$, yielding the following:

$$dA^* = \frac{d\alpha (P_R)^2 - d\rho P_R P_A - dP_g(\lambda P_{AR} P_R - \lambda P_{RR} P_A)}{|\overline{H}|}. \tag{9}$$

Setting $d\alpha$ and dP_g to zero yields the following:

$$\frac{dA^*}{d\rho}\Big|_{d\alpha,\, dP_g = 0} = \frac{-P_R P_A}{|\overline{H}|} > 0. \tag{10}$$

Equation 10 exhibits the conditional demand for accommodation in response to a rise in the cost of repression, holding the change in the cost of accommodation at zero, and the production of P_g constant. It has a positive sign because the numerator is negatively signed and we know from the second-order conditions that the denominator is also negatively signed. The numerator is negatively signed because we know from the first-order conditions that both P_R and P_A are positive (recall that $P_A = \frac{\partial P_g}{\partial A}$, and $P_R = \frac{\partial P_g}{\partial R}$). Thus, an increase in the cost of repression will lead the state to substitute accommodation for repression. More specifically, as depicted in Figure 1, the state will shift toward a more accommodative response when repression is met with dissent.

The analysis of R^* is symmetric to the analysis of A^*. Given that this is a well-known result (e.g., see Varian 1993, 10-11), in the interest of space, I assert, rather than demonstrate, this. Thus, an increase in the cost of accommodation will lead the state to substitute repression for accommodation. More specifically, as depicted in Figure 2, the state will shift toward a more repressive response when accommodation is met with dissent.

APPENDIX B

As noted above, the Violent Intranational Conflict Data Project (VICDP) data record the actors and targets of each event using the names that reporters identified in their articles. For example, if a news report stated that Sendero Luminoso terrorists assassinated the mayor of a village in Peru, then the VICDP project would record Sendero Luminoso as the actor and the government as the target. Similarly, if an article reported that government troops arrested three guerrillas in Sri Lanka, VICDP would record the military as the actor and unspecified guerrillas as the target. Since the model in this study identifies dissidents and the state as the actors, I needed to develop a procedure for converting the VICDP data—which has several state actors and several dissident actors—into a two-actor data set for each case. This appendix describes the procedure for accomplishing that task.

Because of my interest in dissident-state interaction, I wanted to exclude events where dissidents took action against one another or state agents took action against one another (e.g., a coup). Thus, to build the actor/target lists, I opened each VICDP data file and created two frequency counts: one where an agent of the state was the actor and another where an agent of the state was the target. I reviewed the first list and noted all society targets of state activity. Then I reviewed the second list and noted all social actors that took action against the state. A list of the dyads used in each case is available on the World Wide Web at http://garnet.acns.fsu.edu/~whmoore/vicdp/dyads.pdf. To facilitate replication, I use the names used in the *VICDP Codebook* (Moore and Lindström 1996).

REFERENCES

Abbott, Andrew. 1992. From causes to events: Notes on narrative positivism. *Sociological Methods and Research* 20:428-55.

Azar, Edward E. 1982. *Conflict and Peace Databank (COPDAB), 1948-1978*. 2d ed. Inter-University Consortium of Political and Social Research Study No. 7767. Ann Arbor, MI: Inter-University Consortium of Political and Social Research.

Bakeman, Roger, and John M. Gottman. 1986. *Observing interaction: An introduction to sequential analysis*. New York: Cambridge University Press.

Baldani, Jeffrey, James Bradfield, and Robert Turner. 1996. *Mathematical economics*. New York: Dryden.

Bohrnstedt, George W., and David Knoke. 1982. *Statistics for social science data analysis*. Itasca, IL: F. E. Peacock.

Bueno de Mesquita, Bruce. 1997. Counterfactuals and international affairs: Some insights from game theory. In *Counterfactual thought experiments in world politics: Logical, methodological, and psychological perspectives*, edited by Philip E. Tetlock and Aaron Belkin, 211-29. Princeton, NJ: Princeton University Press.

Chiang, Alpha C. 1984. *Fundamental methods of mathematical economics*. 2d ed. New York: McGraw-Hill.

Davenport, Christian A. 1995. Multi-dimensional threat perception and state repression: An inquiry into why states apply negative sanctions. *American Journal of Political Science* 39:683-713.

———. 1996. The weight of the past: Exploring lagged determinants of political repression. *Political Research Quarterly* 49:377-403.

Davis, David R., and Michael D. Ward. 1990. They dance alone: Deaths and the disappeared in contemporary Chile. *Journal of Conflict Resolution* 34:449-75.

della Porta, Donatella. 1995. *Social movements, political violence, and the state: A comparative analysis of Italy and Germany*. New York: Cambridge University Press.

Dixon, William J. 1988. The discrete sequential analysis of dynamic international behavior. *Quality and Quantity* 22:239-54.

Eyerman, Joe. 1998. Terrorism and democratic states: Soft targets or accessible systems. *International Interactions* 24:151-70.

Francisco, Ronald. 1995. The relationship between coercion and protest: An empirical evaluation of three coercive states. *Journal of Conflict Resolution* 39:263-82.

———. 1996. Coercion and protest: An empirical test in two democratic states. *American Journal of Political Science* 40:1179-204.

———. Forthcoming. Why are collective conflicts stable? In *Paths to state repression: Human rights and contentious politics in comparative perspective*, edited by Christian A. Davenport. Boulder, CO: Rowman and Littlefield.

Franklin, James. 1997. IMF conditionality, threat perception, and political repression: A cross-national analysis. *Comparative Political Studies* 30:576-97.

Gartner, Scott Sigmund, and Patrick M. Regan. 1996. Threat and repression: The non-linear relationship between government and opposition violence. *Journal of Peace Research* 33:273-88.

Goldstein, Joshua S. 1992. A conflict-cooperation scale for Weis events data. *Journal of Conflict Resolution* 36:369-85.

Gupta, Dipak K. 1990. *The economics of political violence: The effects of stability on economic growth.* New York: Praeger.

Gurr, Ted Robert. 1970. *Why men rebel.* Princeton, NJ: Princeton University Press.

Henderson, Conway W. 1991. Conditions affecting the use of political repression. *Journal of Conflict Resolution* 35:120-42.

Jackman, Robert W. 1985. Cross-national statistical research and the study of comparative politics. *American Journal of Political Science* 29:169-82.

Keohane, Robert O. 1984. *After hegemony: Cooperation and discord in the world political economy.* Princeton, NJ: Princeton University Press.

Khawaja, Marwan. 1993. Repression and popular collective action: Evidence from the West Bank. *Sociological Forum* 8:47-71.

Kowalewski, David, and Dean Hoover. 1994. *Dynamic models of conflict and pacification: Dissenters, officials, and peacemakers.* Westport, CT: Greenwood.

Krain, Matthew. 1998. Repression and accommodation in post-revolutionary states. Ph.D. diss., University of Indiana.

Kreps, David M. 1990. *A course in microeconomic theory.* Princeton, NJ: Princeton University Press.

Lee, Chris. 1998. An inquiry into the dissent-repression nexus. Paper presented at the annual meeting of the International Studies Association, March, Minneapolis.

Lichbach, Mark Irving. 1984. An economic theory of governability. *Public Choice* 44:307-37.

———. 1987. Deterrence or escalation? The puzzle of aggregate studies of repression and dissent. *Journal of Conflict Resolution* 31:266-97.

Marlin-Bennett, Renée, Alan Rosenblatt, and Jianxin Wang. 1991. The visible hand: The United States, Japan, and the management of trade disputes. *International Interactions* 17:191-213.

Moore, Will H. 1995. Action-reaction or rational expectations? The domestic-international conflict nexus during the "Rhodesia problem." *Journal of Conflict Resolution* 39:129-67.

———. 1998. Repression and dissent: Substitution, context and timing. *American Journal of Political Science* 42:851-73.

Moore, Will H., and Ronny Lindström. 1996. *The Violent Intranational Conflict Data Project (VICDP) Codebook.* Riverside: University of California, Riverside.

Moore, Will H., Ronny Lindström, and Valerie O'Regan. 1996. Land reform, political violence and the economic inequality-political conflict nexus: A longitudinal analysis. *International Interactions* 21:335-63.

Morgan, T. Clifton, and Glenn Palmer. 1997. A two-good theory of foreign policy: An application to dispute initiation and reciprocation. *International Interactions* 22:225-44.

———. 1998. Room to move: Security, proaction, and institutions in foreign policy decision making. In *Strategic politicians, institutions, and foreign policy*, edited by R. Siverson, 193-200. Ann Arbor: University of Michigan Press.

Olzak, Susan, and Johan L. Olivier. 1998. Racial conflict and protest in South Africa and the United States. *European Sociological Review* 14:255-78.

Poe, Steven C., and C. Neal Tate. 1994. Repression of human rights to personal integrity in the 1980s: A global analysis. *American Political Science Review* 88:853-72.

Rasler, Karen. 1996. Concessions, repression, and political protest in the Iranian revolution. *American Sociological Review* 61:132-52.

———. Forthcoming. State-social movement interactions, political opportunities and outcomes: Linking repression and dissent in the Intifada to Israeli concessions. In *Paths to state repression: Human rights and contentious politics in comparative perspective*, edited by Christian A. Davenport. Boulder, CO: Rowman and Littlefield.

Sandler, Todd, John T. Tschirhart, and Jon Cauley. 1983. A theoretical analysis of transnational terrorism. *American Political Science Review* 77:36-54.

Snyder, David. 1976. Theoretical and methodological problems in the analysis of governmental coercion and collective violence. *Journal of Political and Military Sociology* 4:277-93.

Tsebelis, George, and John Sprague. 1989. Coercion and revolution: Variations on a predator-prey model. *Mathematical Computer Modeling* 12:547-59.

Varian, Hal R. 1992. *Microeconomic analysis*. 3d ed. New York: Norton.

———. 1993. Symbolic optimization. In *Economic and financial modeling with Mathematica*, edited by Hal R. Varian, 1-25. New York: Springer-Verlag.

Zinnes, Dina A. 1976. *Quantitative international politics: A perspective and critical appraisal*. New York: Free Press.